

## II. Remarks

The Examiner's recognition of Applicants' invention by the indication of allowable subject matter in claims 3, 7 and 10-16 is gratefully acknowledged.

### *Claim Rejections - 35 U.S.C. § 112*

Claims 1-16 were rejected under 35 U.S.C. 112 as being indefinite with respect to the wording "of the type" in claims 1 and 10.

Claim 1 has been amended to more particularly point out that the claimed drive assembly is adapted for use in a sootblower that includes a carriage and a lance tube. Claim 10 has been similarly amended. The remaining claims are dependent upon claims 1 and 10. It is believed that the amendments to the independent claims overcome the rejections of the dependent claims, since no other reason was presented.

In view of the amendments to the claims, it is respectfully requested that the rejection of claims 1-16 based upon 35 U.S.C. 112 be withdrawn, and that the claims be allowed.

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### *Claim Rejections - 35 U.S.C. §103(a)*

Claims 1, 2, 4-6 and 8 were rejected under 35 U.S.C. 103 as unpatentable over United States Patent No. 3,230,568, issued to Saltz in 1966, in view of Japanese Patent Document 2-284682, filed by Murakami et al. and published in 1990.

Saltz shows a sootblower wherein the spray pattern varies depending upon the longitudinal direction of the lance. Referring to Figs. 1-6, chain and sprocket transmissions 72 and 74 couple motor 40 to rack 70 to move lance

20 longitudinally. Motor 40 also rotates lance tube 20 through sprockets 96 and 98 and drive chain 100, column 7, lines 20-26. In this embodiment, lance tube 20 rotates at a substantially constant speed. In contrast, in Applicants' invention, the lance tube is rotated at a non-constant speed. In Saltz, Fig. 7, lance tube 20 is rotated by chain and sprocket transmission 108 as the lance tube advances, and is rotated by a chain and sprocket transmission 114 during retraction, column 7, line 69, through column 8, line 12. Although this results in different rotational speeds during projection and retraction, within each phase the rotational speed is constant. Referring to Fig. 8, the lance tube is rotated during projection by a transmission 132, and during retraction by transmission 138. Like the embodiment in Fig. 7, this produces a constant rotation during each phase of the travel. Therefore, Saltz shows a sootblower wherein the lance tube rotates at a constant speed. In Applicants' invention, the use of non-circular gears results in a non-constant rotational speed that varies as a function of angular direction. Nothing in Saltz teaches or suggests varying the rotational speed of the lance tube as a function of angular direction.

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The rejections relies upon the Japanese Patent Document to make up the deficiency. Referring to Figs. 1 and 2, the document shows a nozzle 7 that is directed perpendicular to work 4. Referring to Fig. 4, movement of nozzle 7 is achieved by non-circular gears 10 and 11. It is pointed out that nozzle 7 is offset relative to the axis of rotation of gear 10. Thus, nozzle 7 does not rotate about the axis, but rather revolves in an orbit about the axis. Further, the Japanese Patent Document relates to scanning the surface of work 4 that is carried on a conveyor 1. There is nothing in the Japanese

Patent Document to suggest utilizing the revolving nozzle in a sootblower application that includes a lance tube that travels longitudinally. Since Saltz only teaches a constant rotational speed, and the Japanese Patent Document shows an orbital path, there is nothing to point the practitioner to rotate a sootblower lance at a non-constant rotational speed. Thus, the references can not lead the practitioner to Applicants' invention.

Claim 1 is directed to Applicants' drive assembly for a sootblower that includes a lance rotational drive train having non-circular gears that provide a variable drive ratio such that the angular speed varies with the rotational position of the non-circular gears. The drive assembly in claim 1 also includes a lance tube drive that is coupled to the drive train output for rotating the lance tube at a non-constant speed. In Saltz, the transmission produces a constant angular speed that does not vary with the rotational position of the gears, and thus achieves a constant rotational speed for the lance tube. Nothing in Saltz points the practitioner to seek a non-constant rotational speed, a key feature of Applicants' invention. Further, the Japanese Patent Document shows an operation that is readily distinguished from a sootblower, shows movement of the nozzle in an orbital path, and so does not lead the practitioner to the sootblower drive assembly in claim 1. Therefore, Applicants' claim 1 is not taught or suggested by Saltz or the Japanese Patent Document, even if combined.

Claims 2, 4-6 and 8 are dependent upon claim 1 and thus not taught or suggested for the reasons set forth with regard to that claim.

Therefore, for the reasons set forth herein, it is respectfully requested that the rejection of claims 1, 2, 4-6 and 8 under 35 U.S.C. 103 be reconsidered and withdrawn, and that said claims be allowed.

*Conclusion*

In view of the amendments herein, and the remarks set forth above, it is believed that all grounds of rejection of the claims have been addressed and overcome, and that all claims are in condition for allowance. If further prosecution of the application, the Examiner is urged to contact the undersigned at the phone number provided.

Respectfully submitted by,

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